Origin
Server

100

TCP/IP

110

Router

101

TCP/IP

TCP/IP

Cache Appliance
102

Proxy

Cache
Appliance 103

Proxy

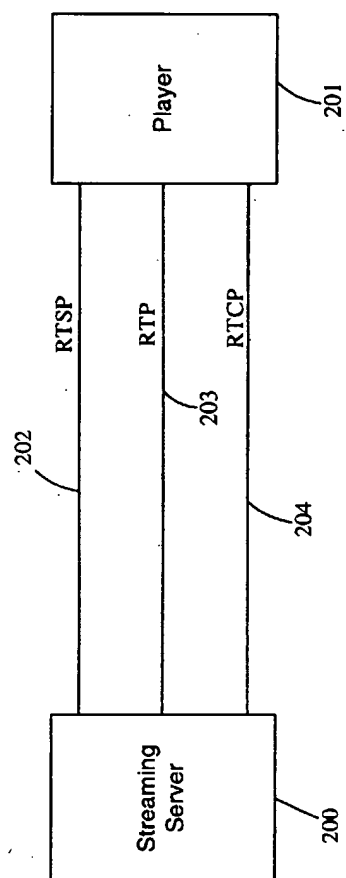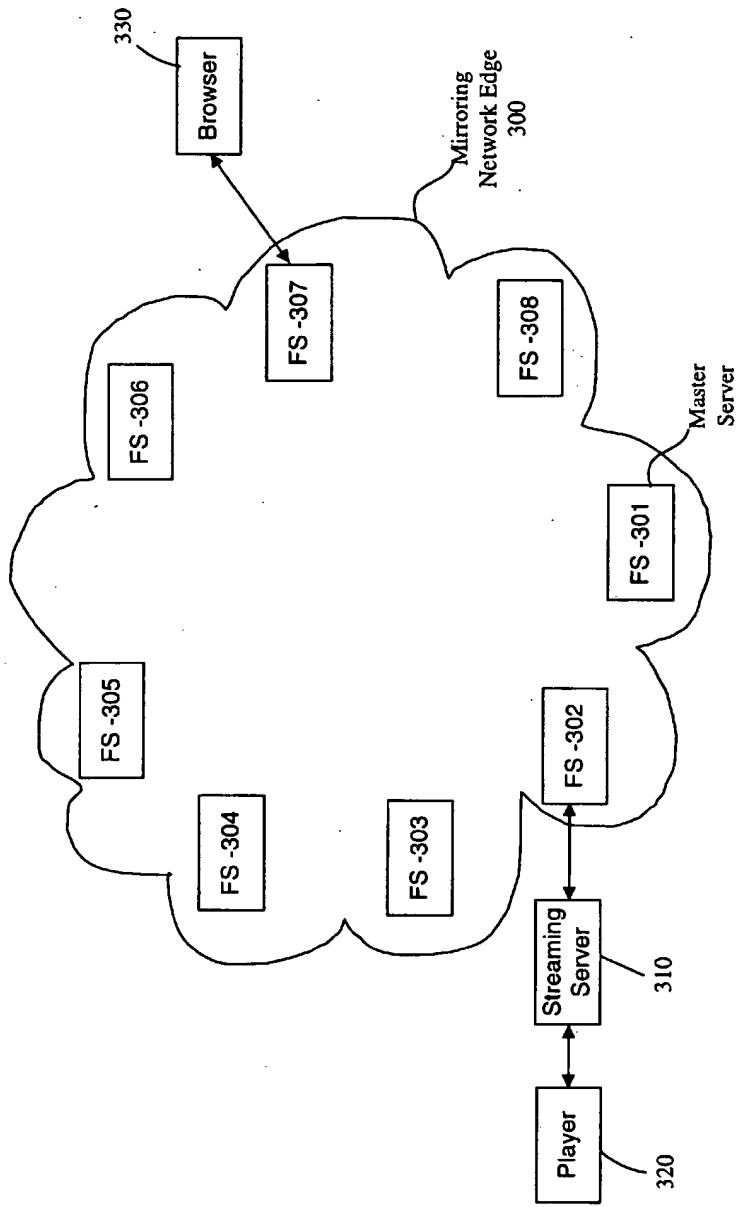User 1

104

LAN A

User 2

105

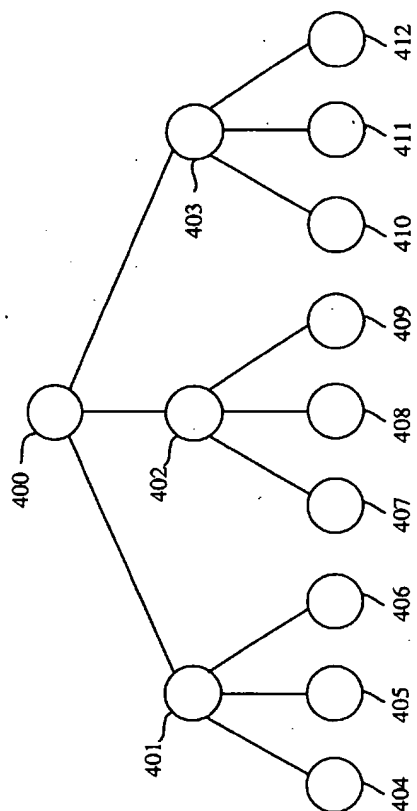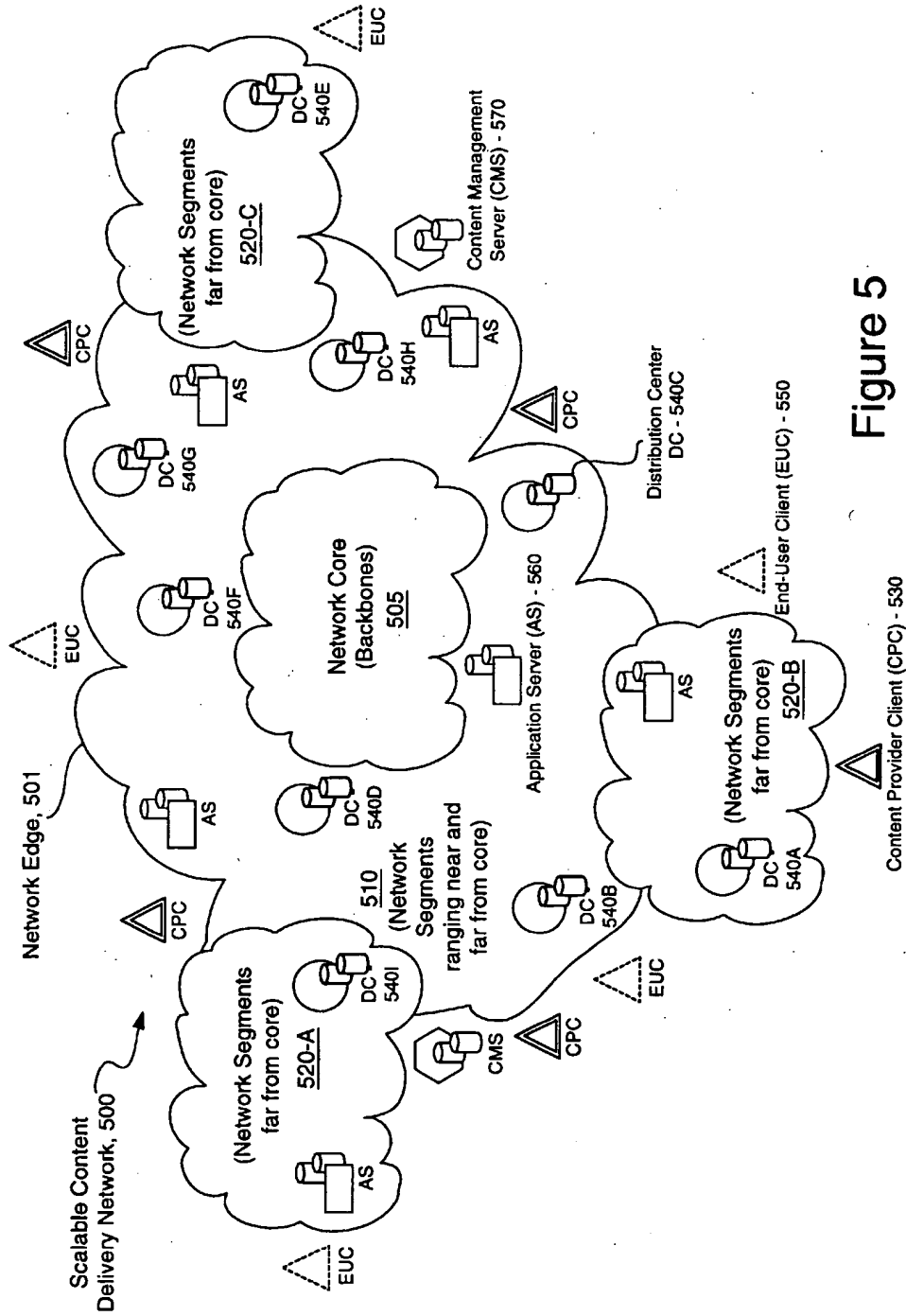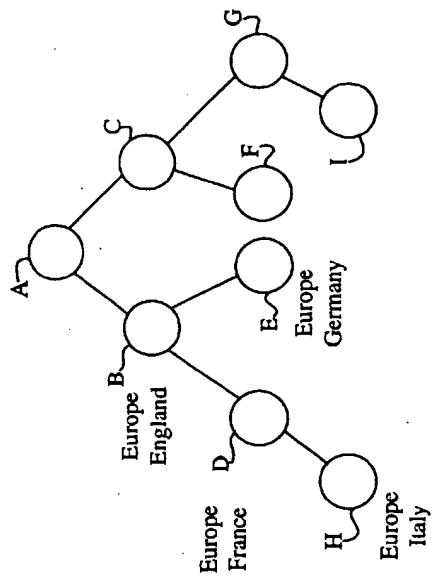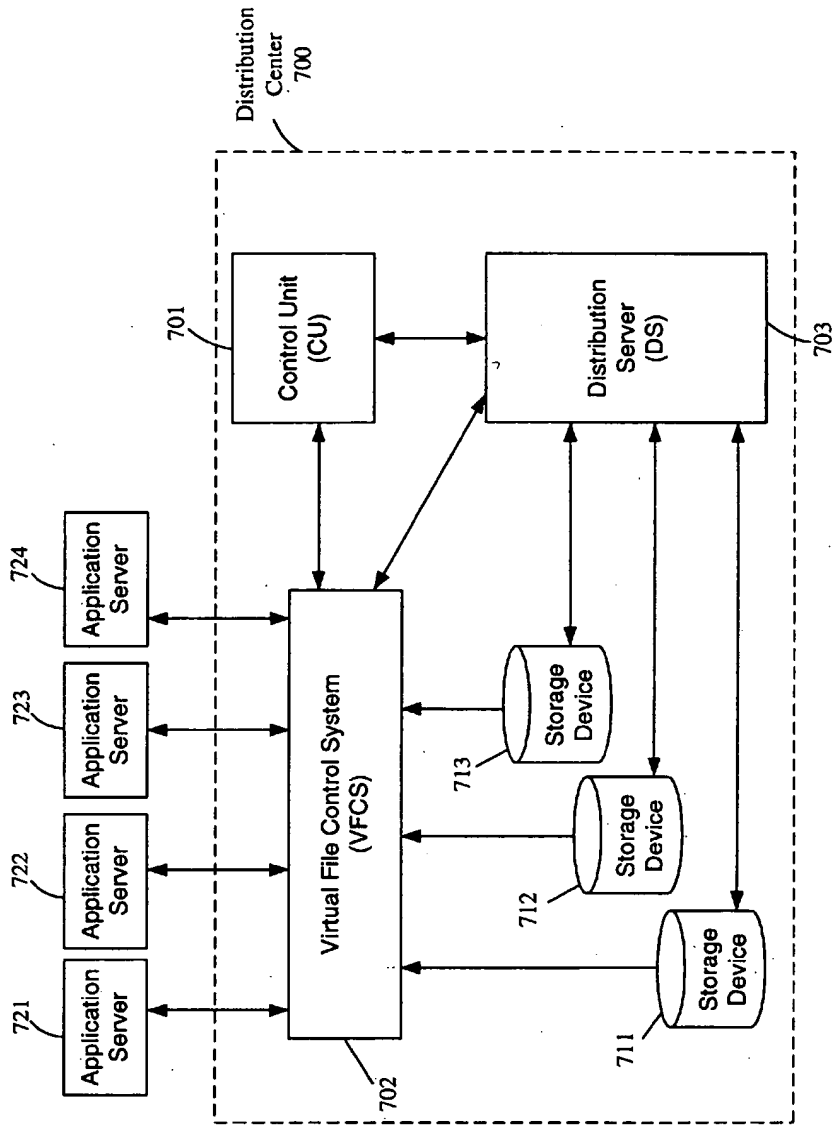108

User 4

106

LAN B

User 3

107

109

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9

Media File, 1000

| Header | Video | Audio Ch1 | Audio Ch2 | Control |

Track Files, 1010

| H | Video | Audio Ch1 | Audio Ch2 | C |

Block Files, 1020

H	V_1	V_2	V_3	V_4
$A_{1,1}$	$A_{1,2}$			
$A_{2,1}$	$A_{2,2}$			
C				
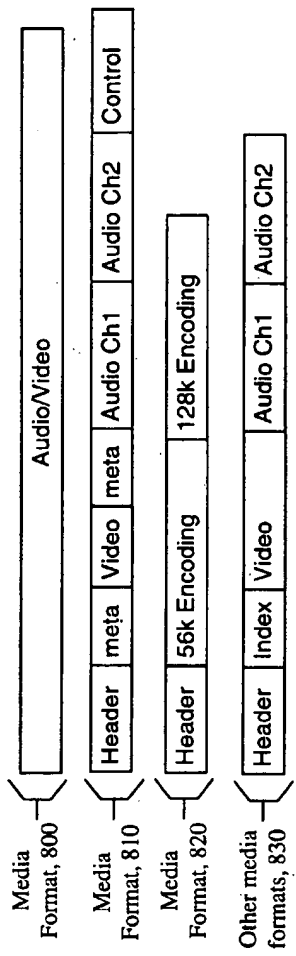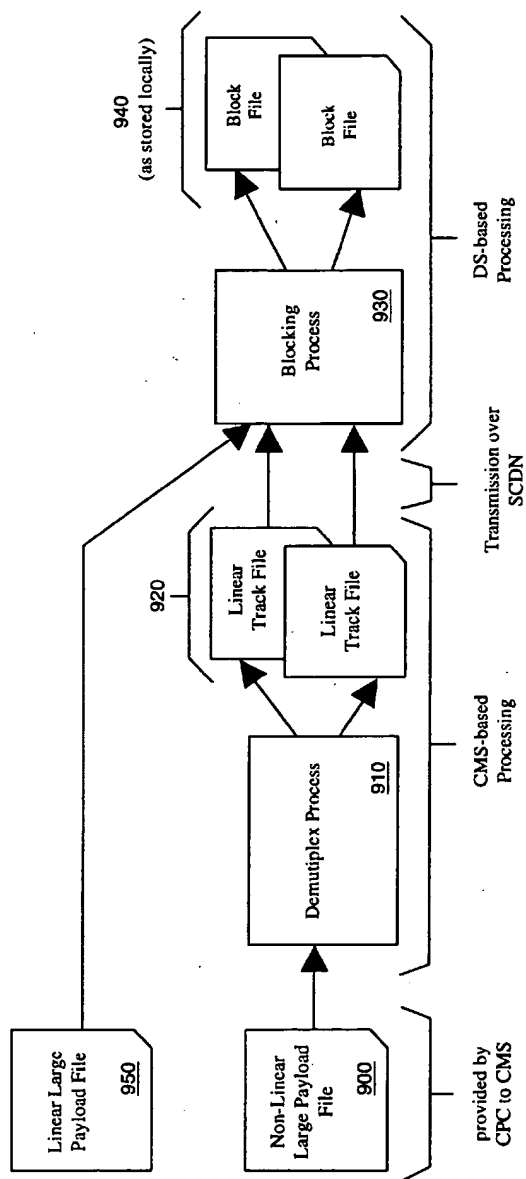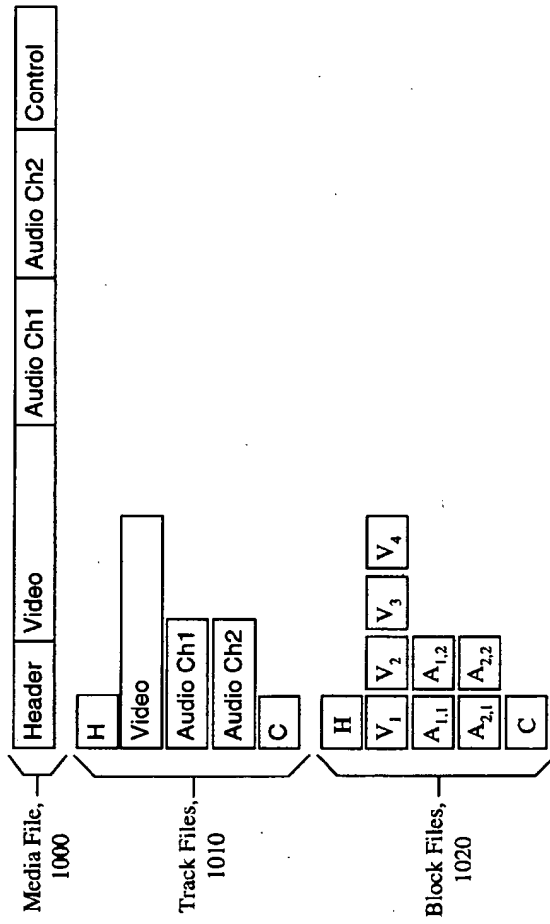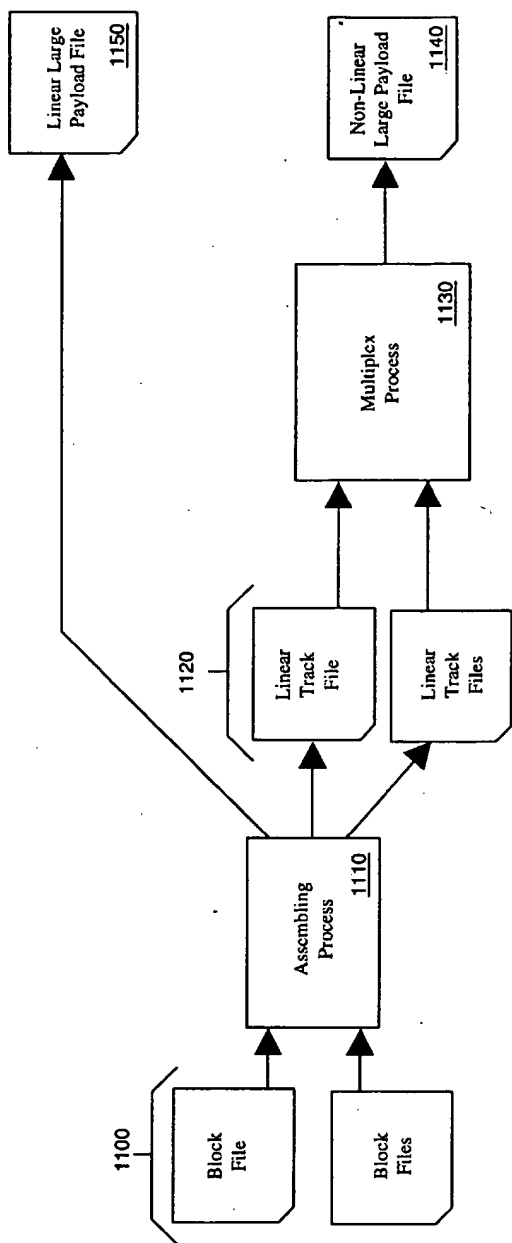
Figure 10

Figure 11

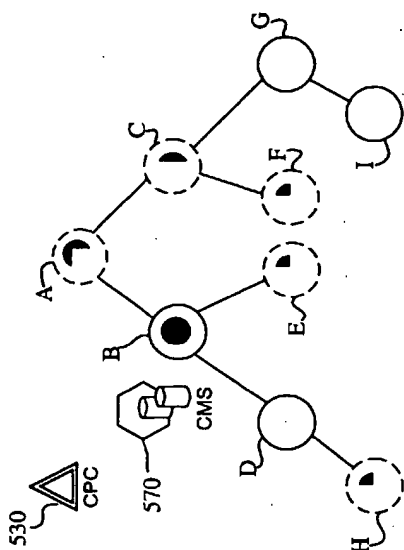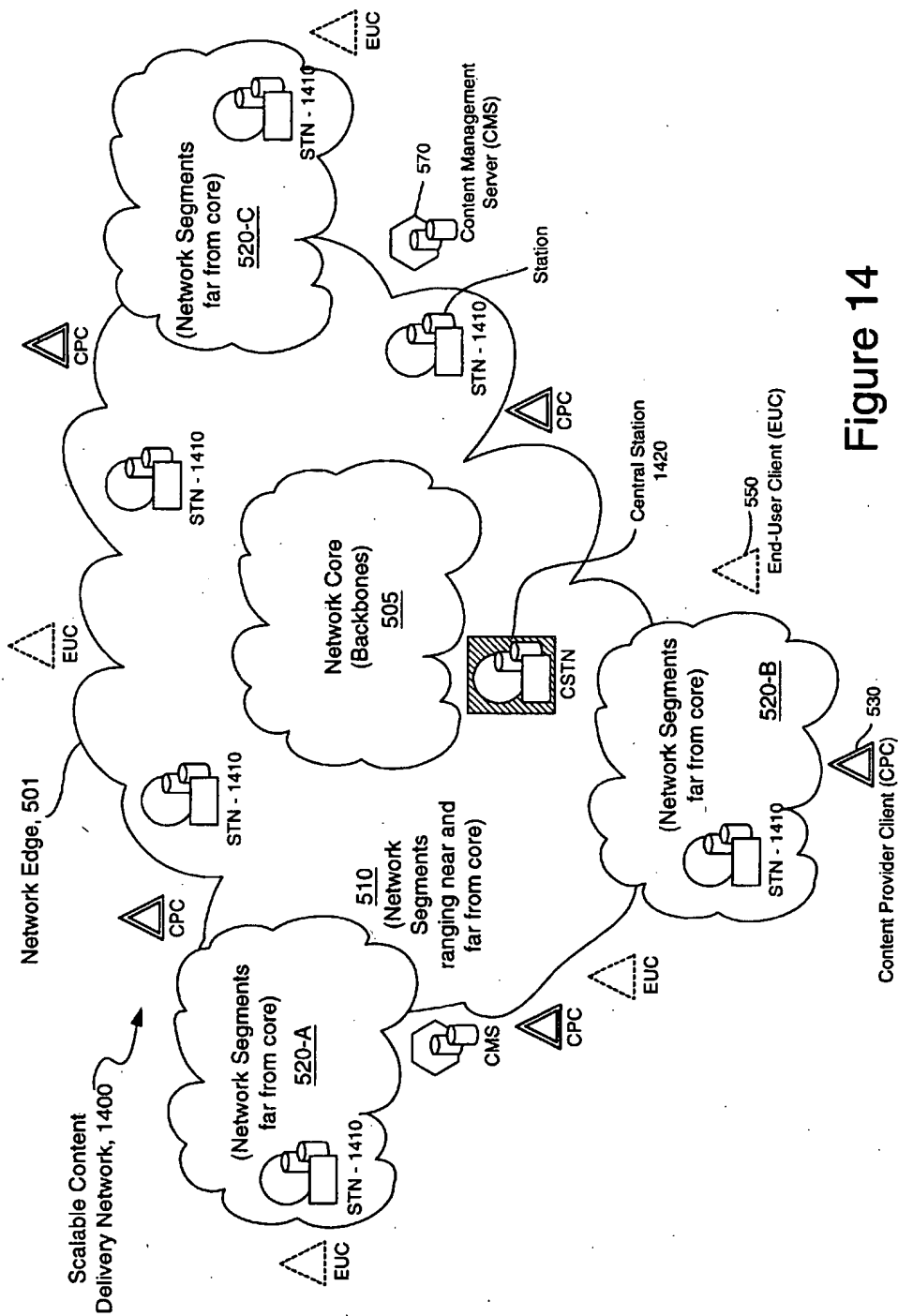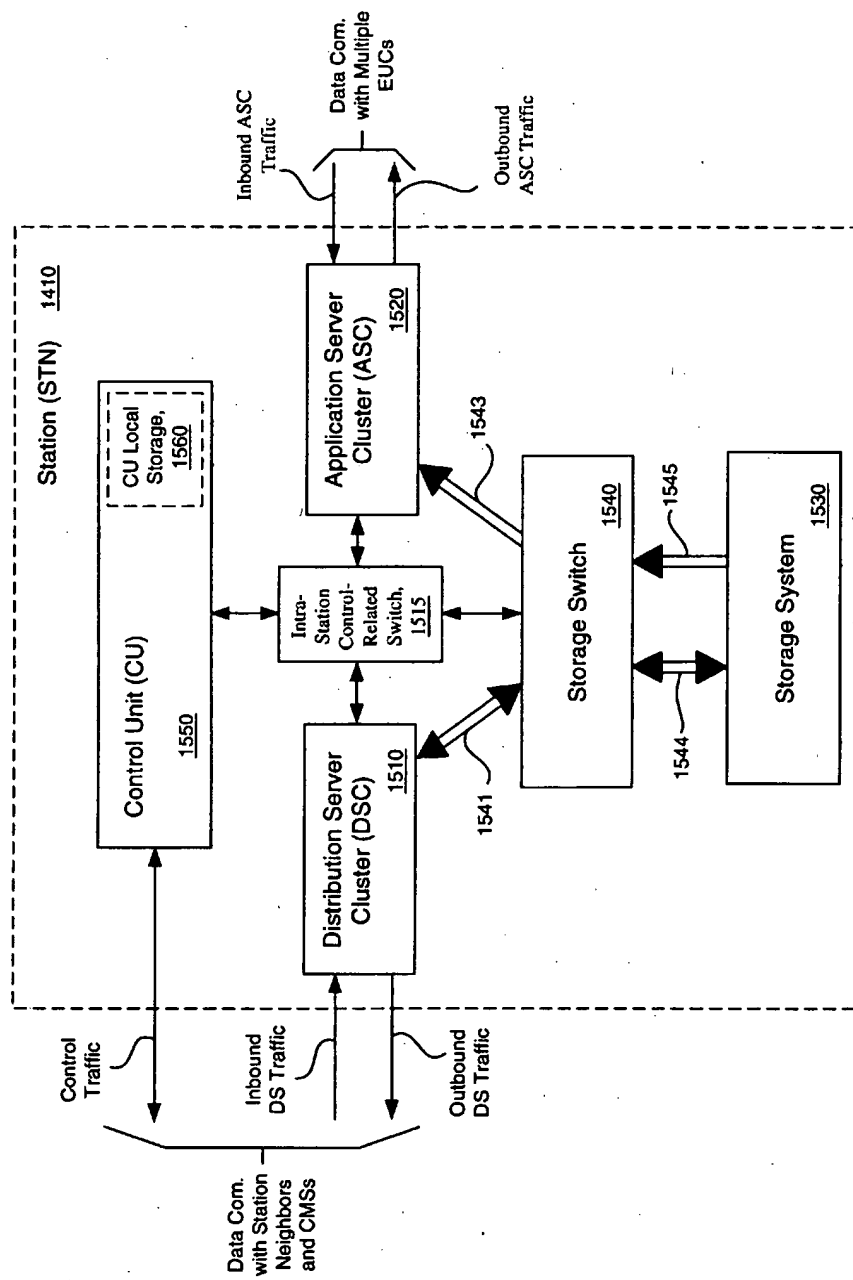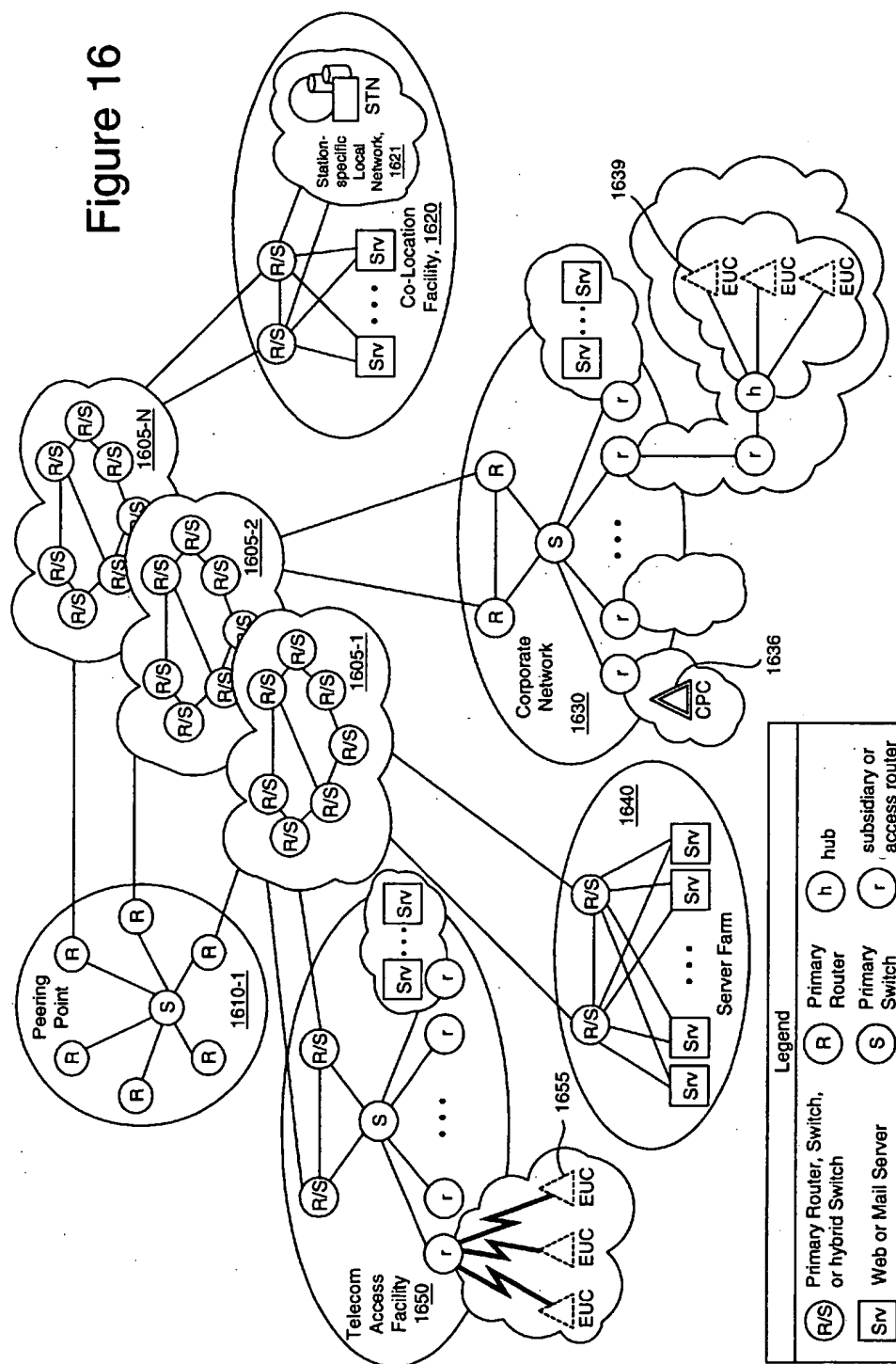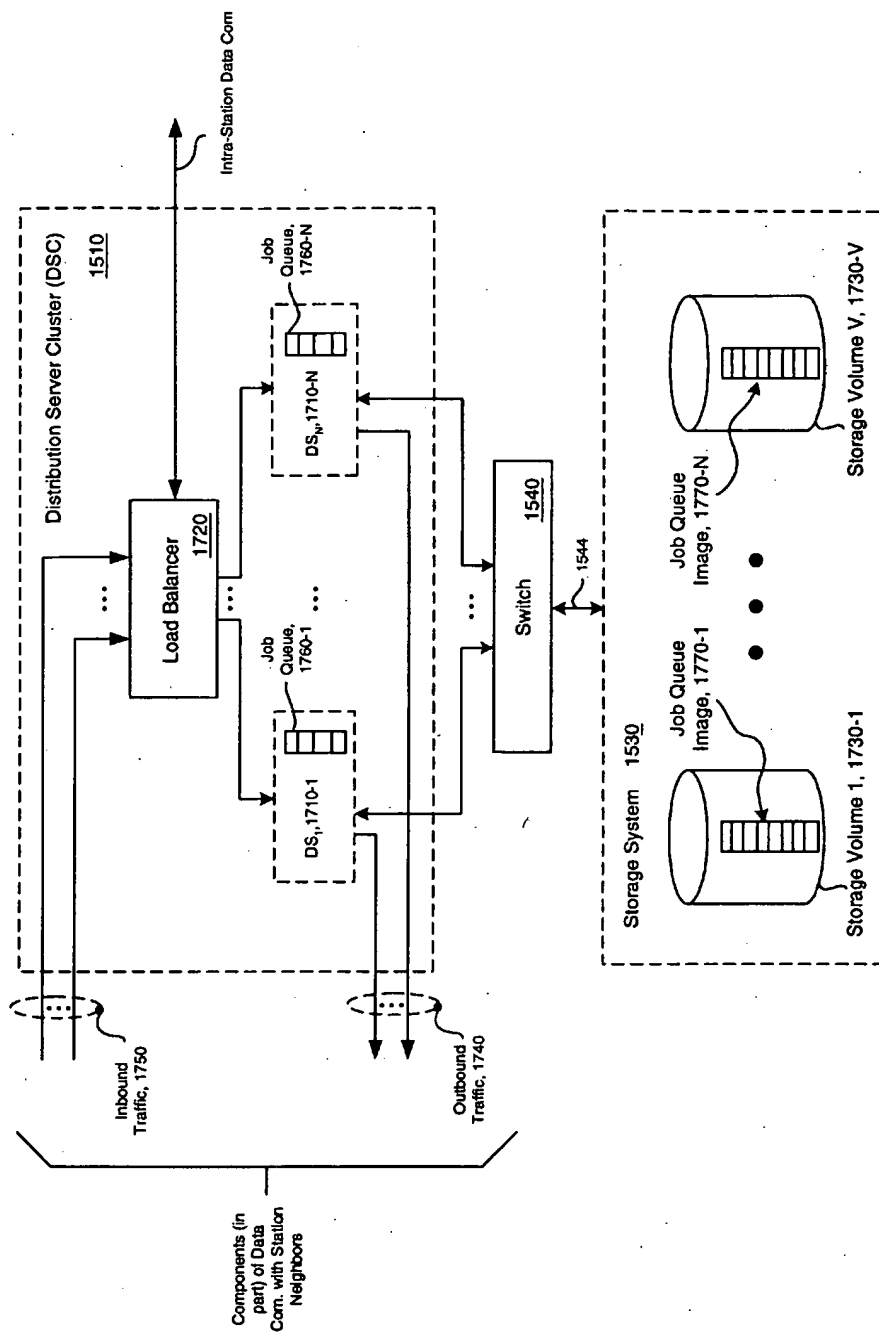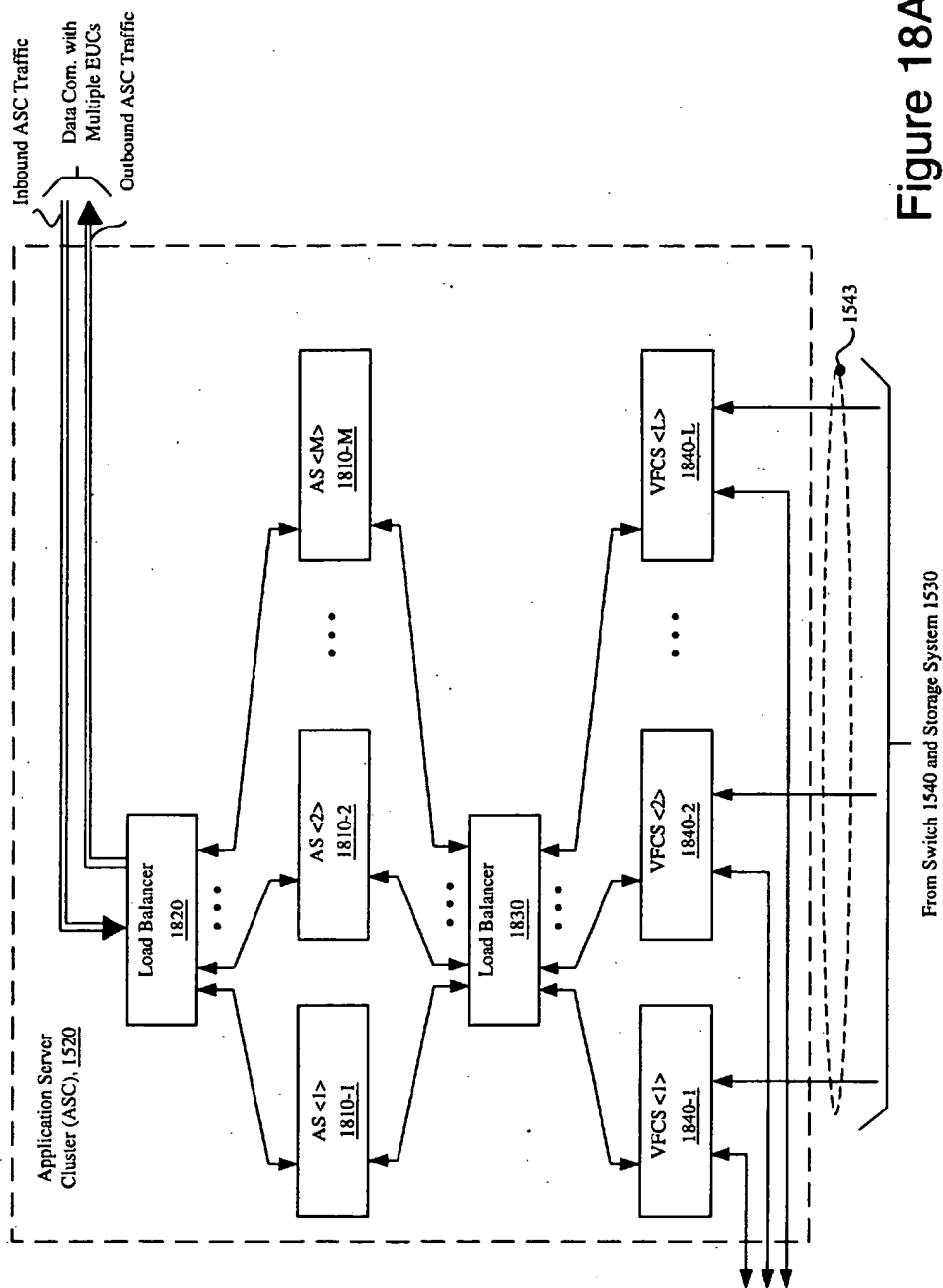| Bit Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Attribute B	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1200
Attribute D	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1210
Attribute E	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1220
Attribute H	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1230
Rolled Up Attribute D	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1240
Rolled Up Attribute B	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1250

Figure 12

Figure 13

Figure 14

Figure 15

Figure 16

Figure 17

Figure 18A

Figure 18B

Figure 18C

Figure 19

Station 1410

Control Unit 1550

| Resource Management Subsystem 2050 | Learning Subsystem 2060 | Storage Management Subsystem 2070 | Service Management Subsystem 2080 |

Data Repositories 2000

Network Resource Repository 2010

History & Statitics Repository 2030

Event Resource Repository 2040

Content Repository: Content Provider Data, File Distribution Criteria, File Metadata, Block files 1530
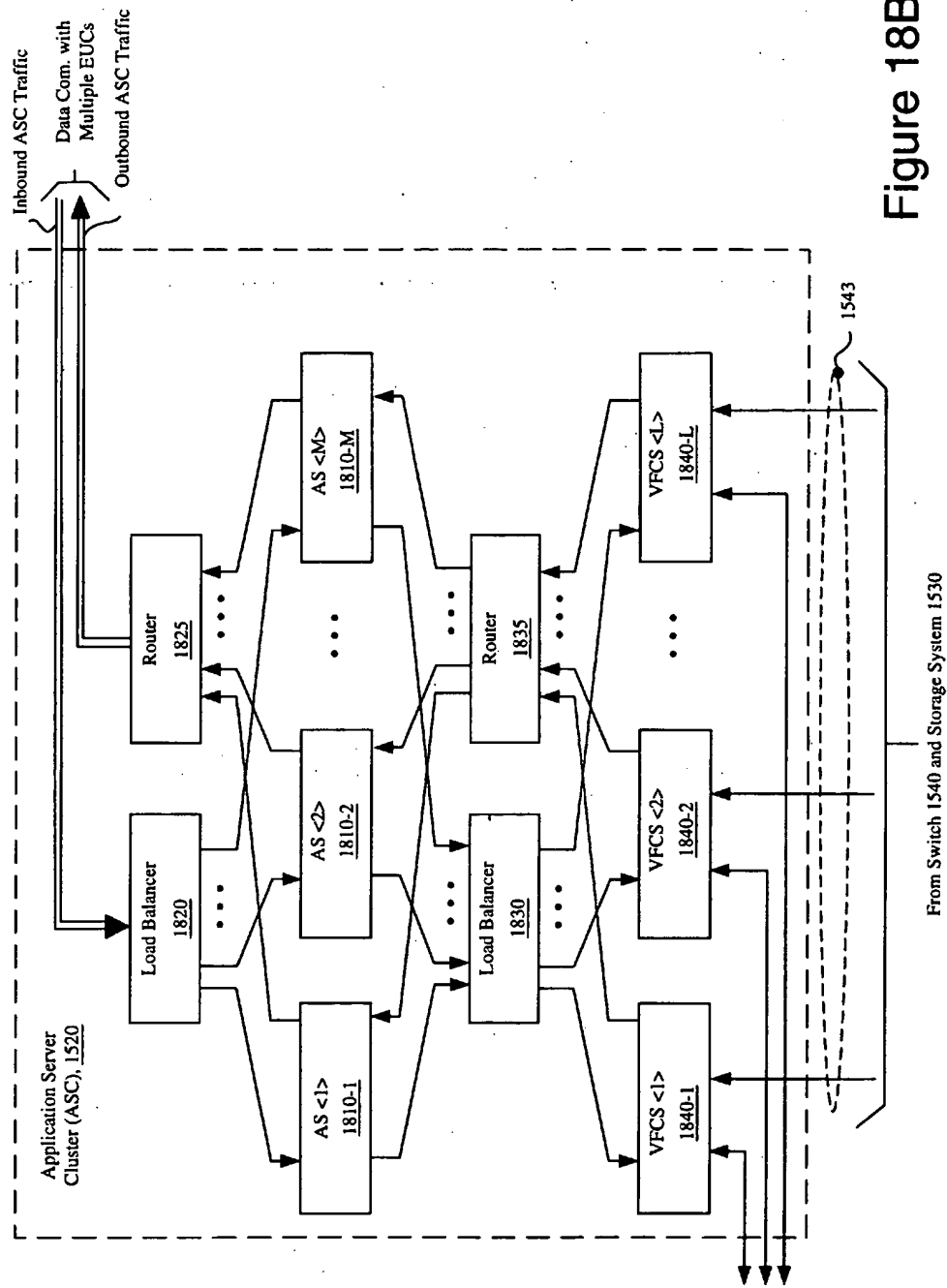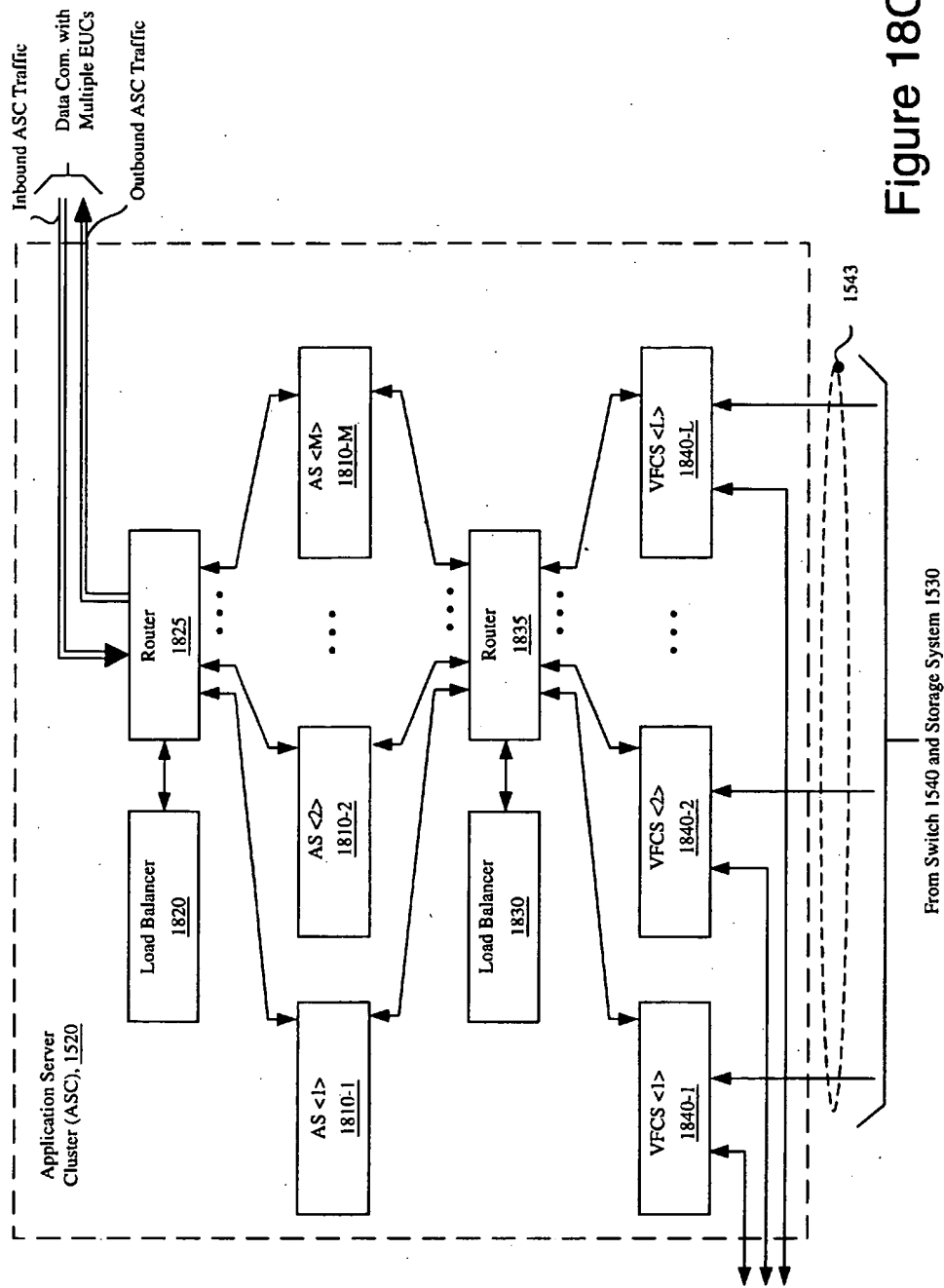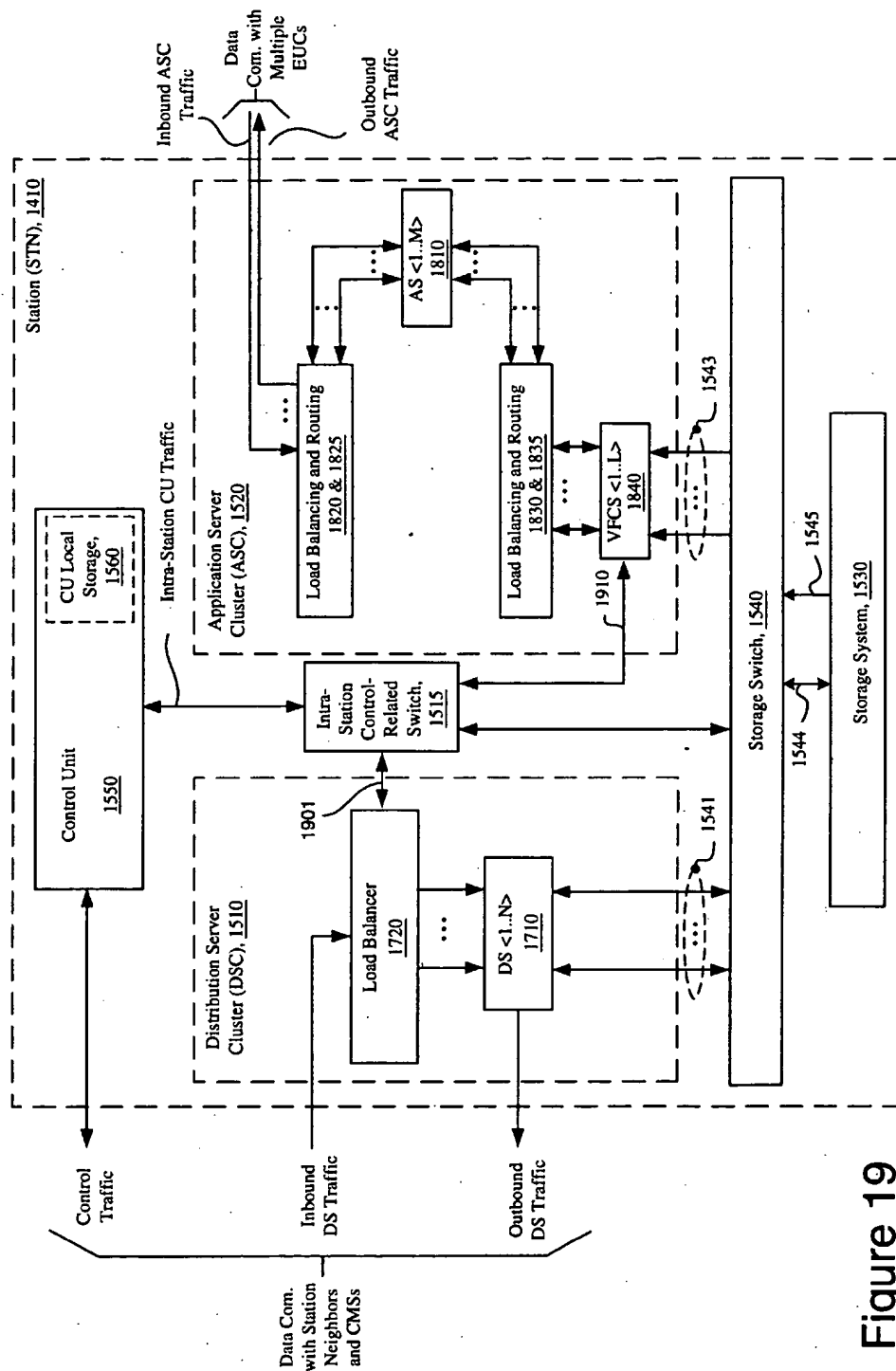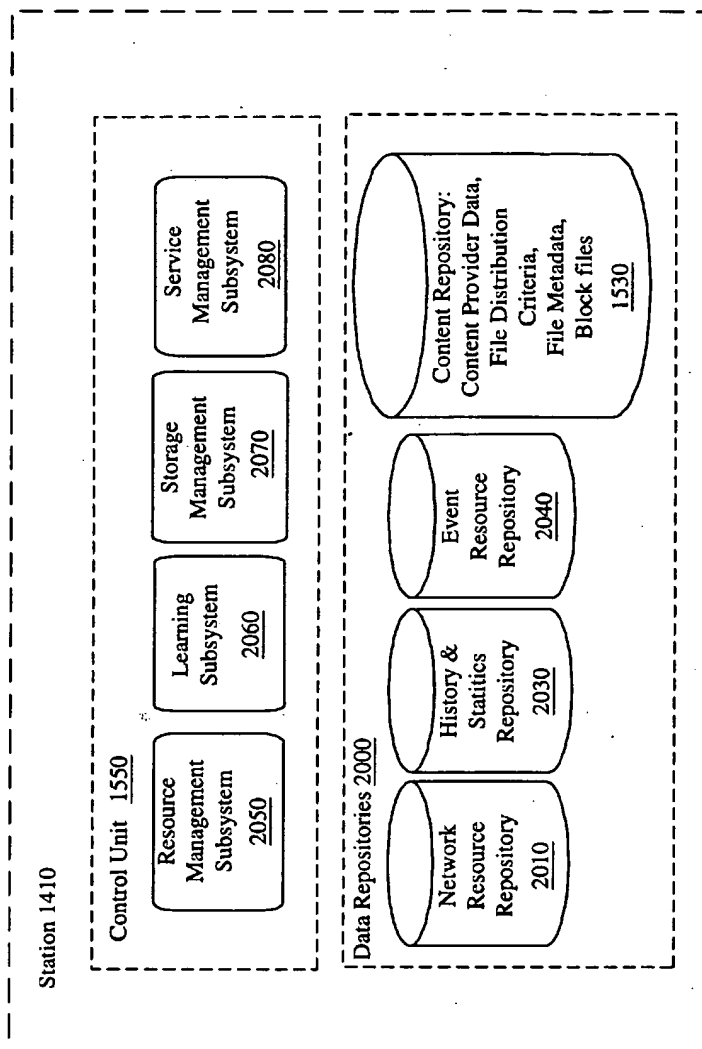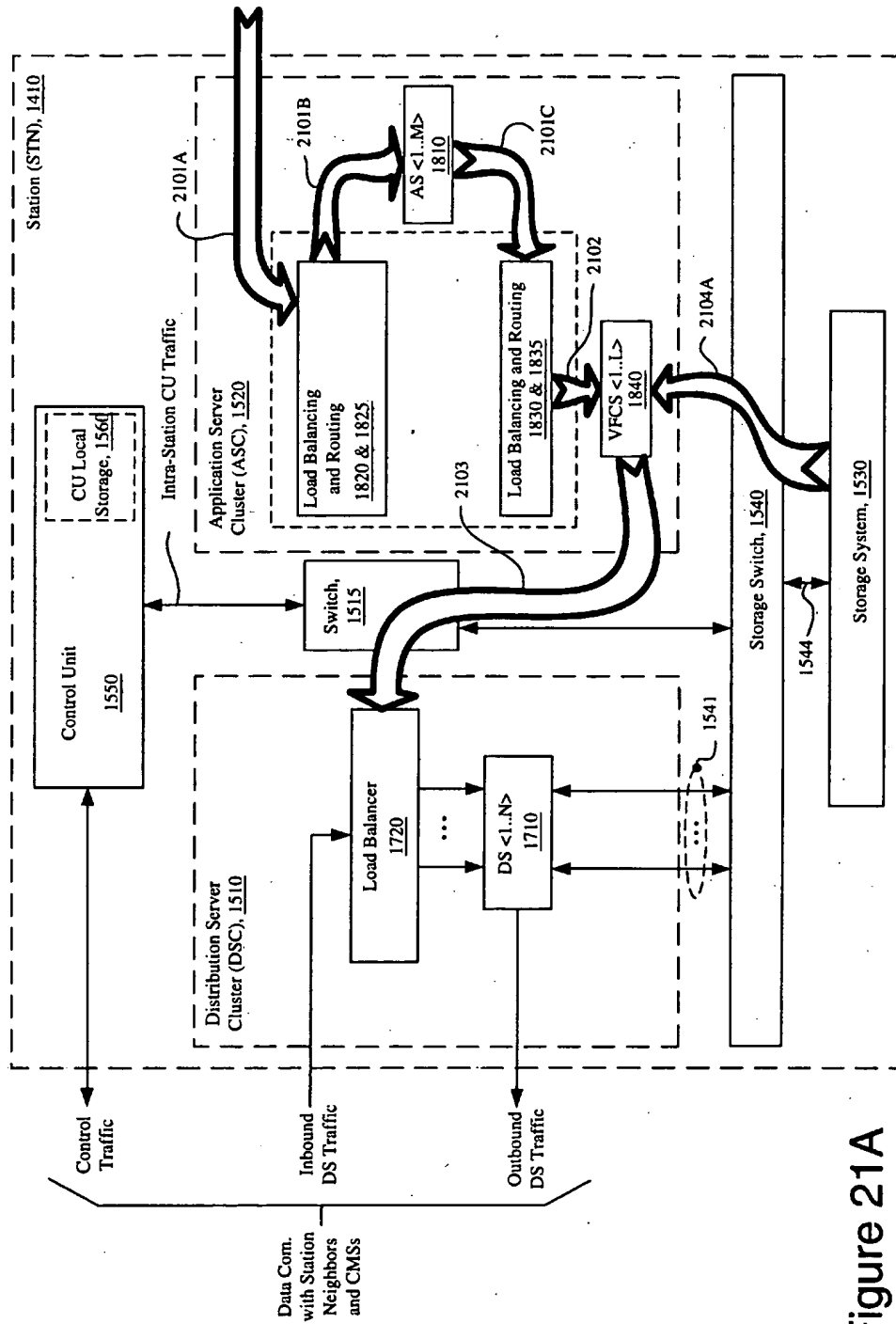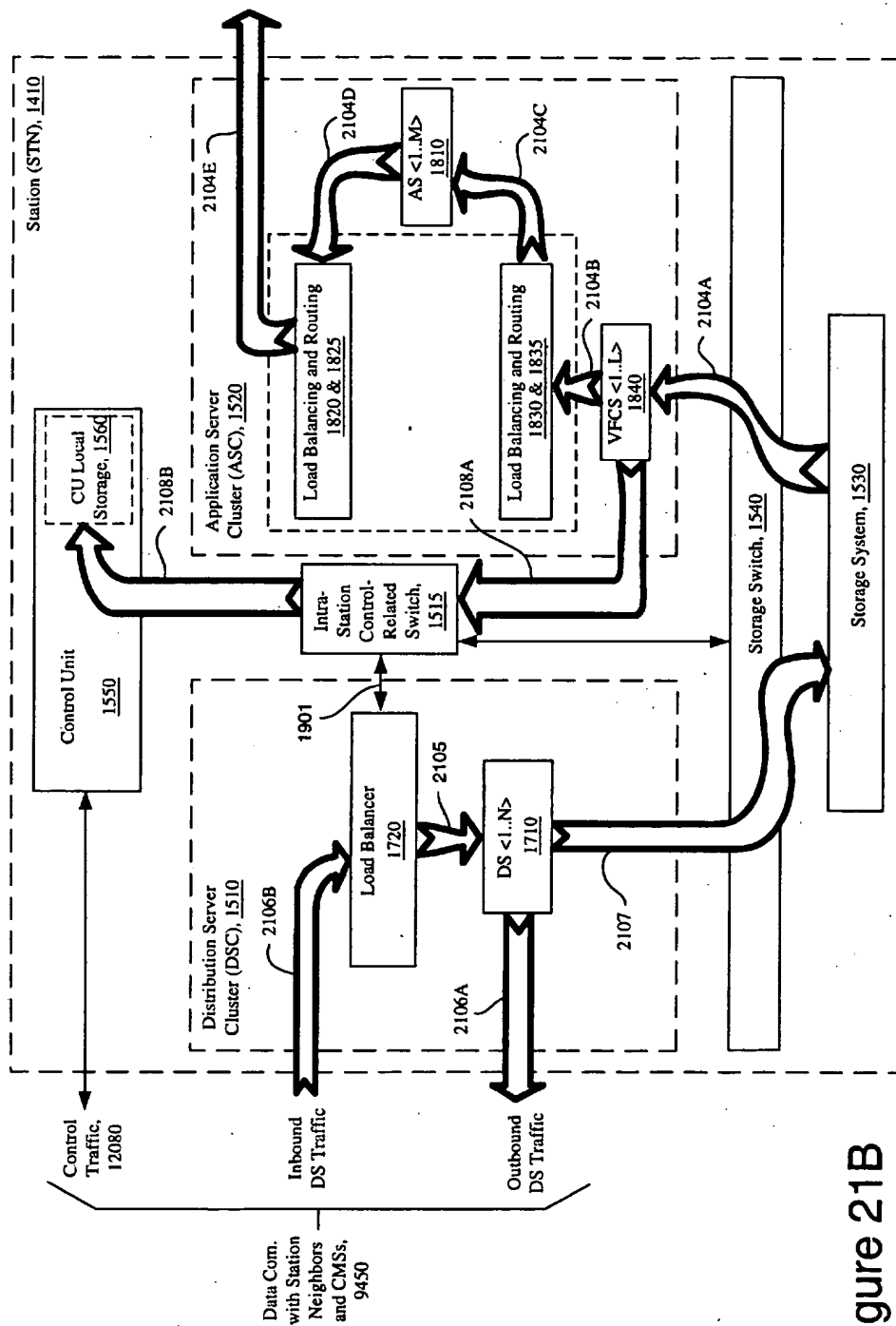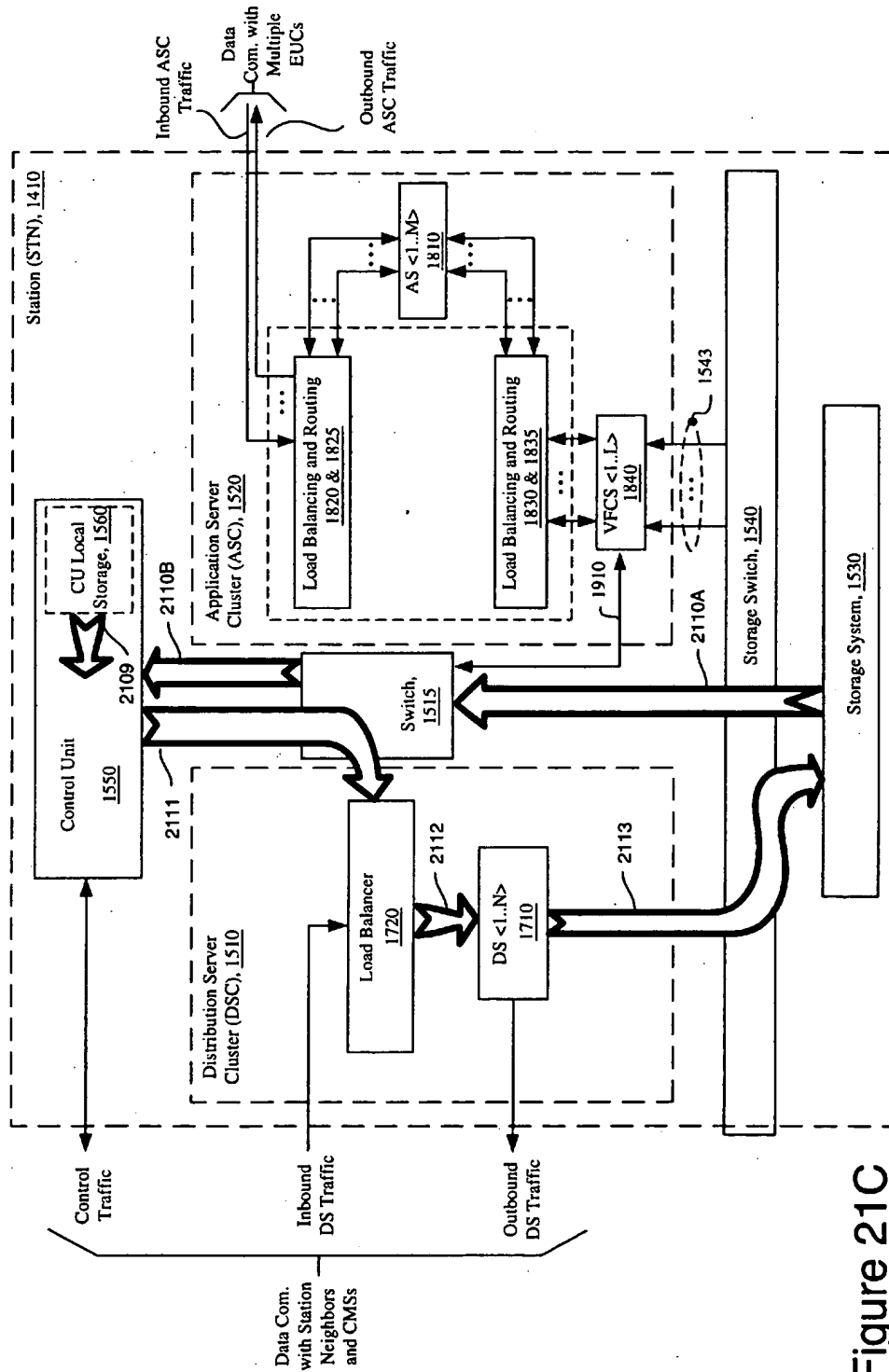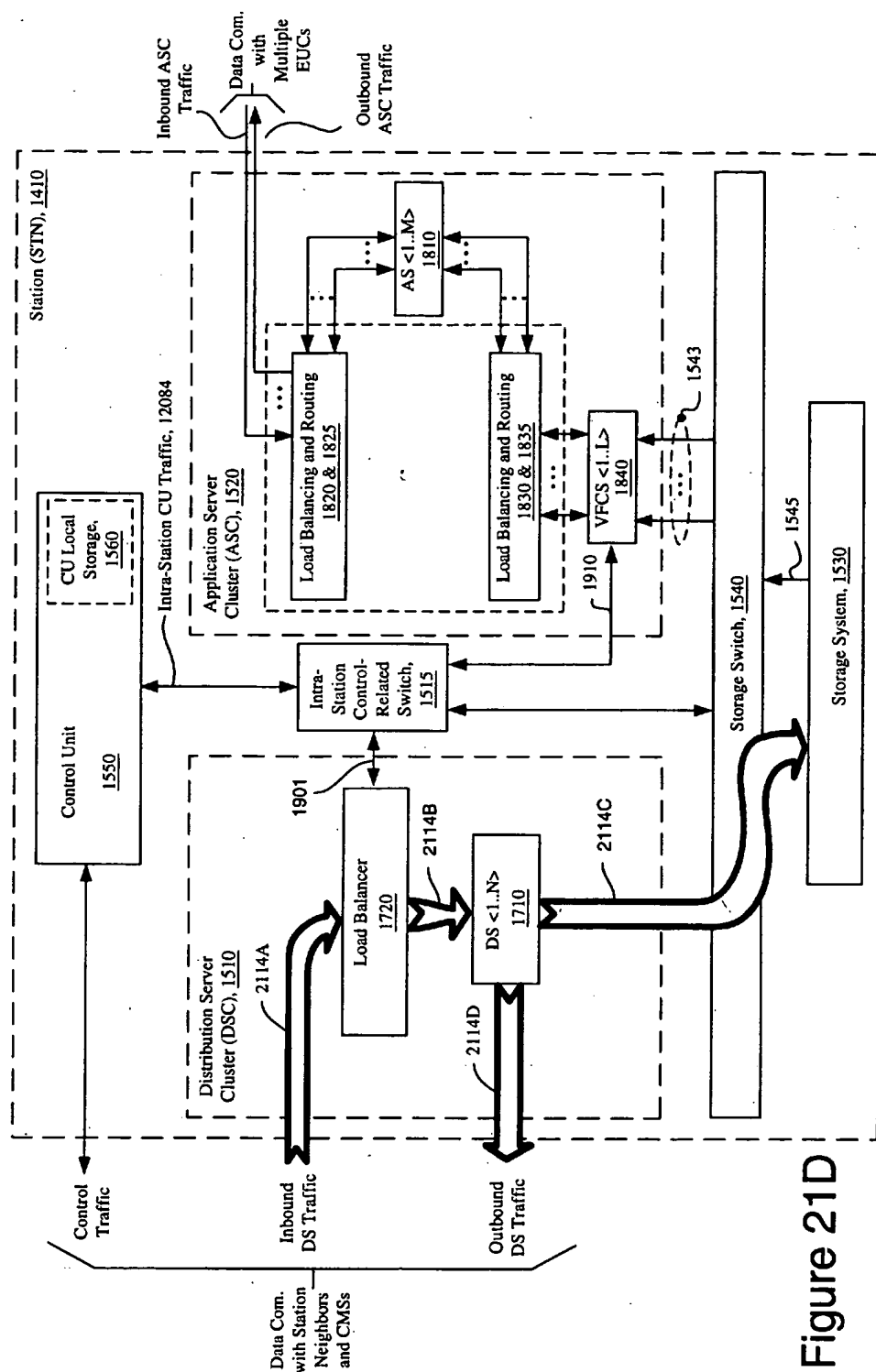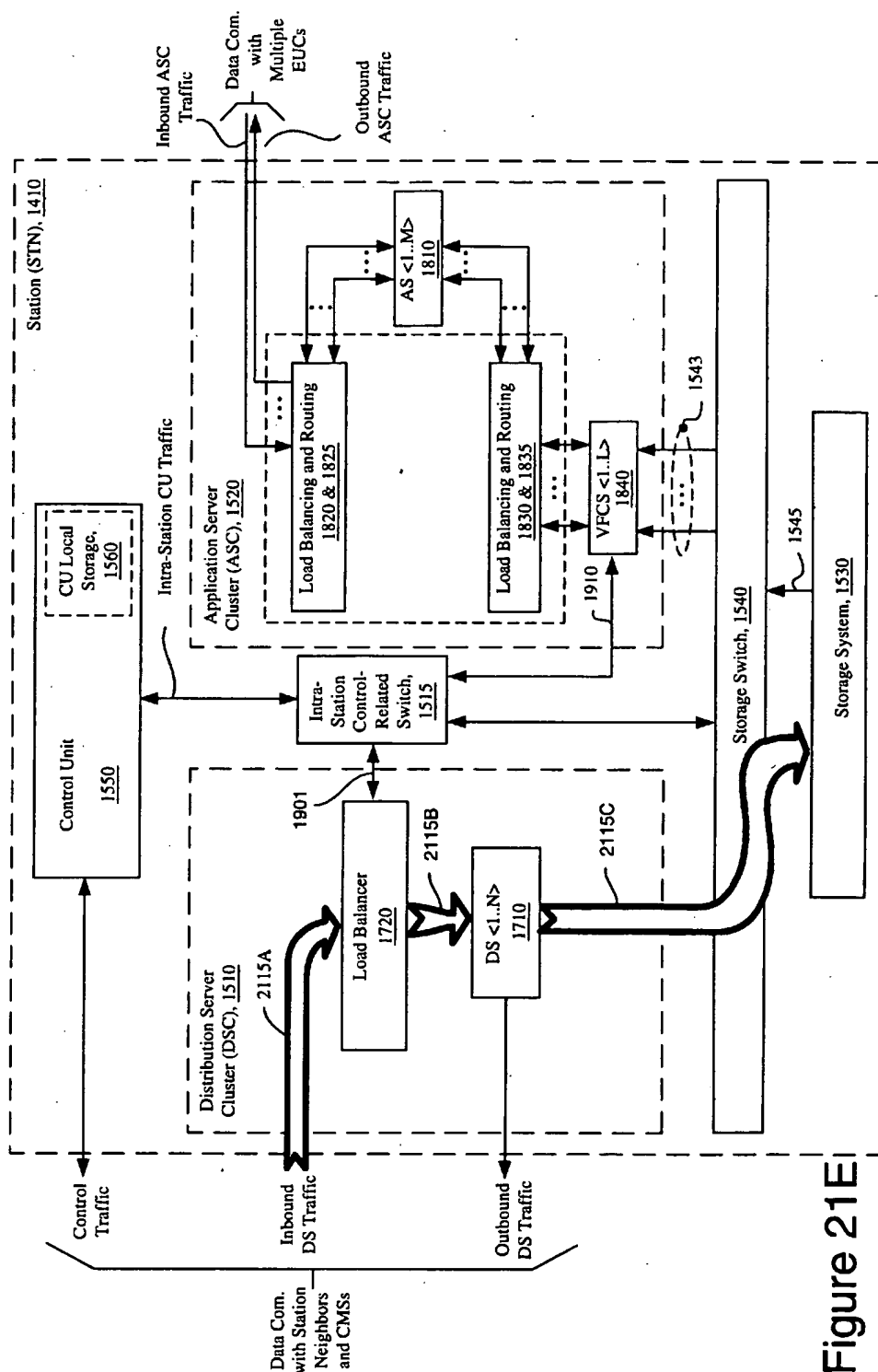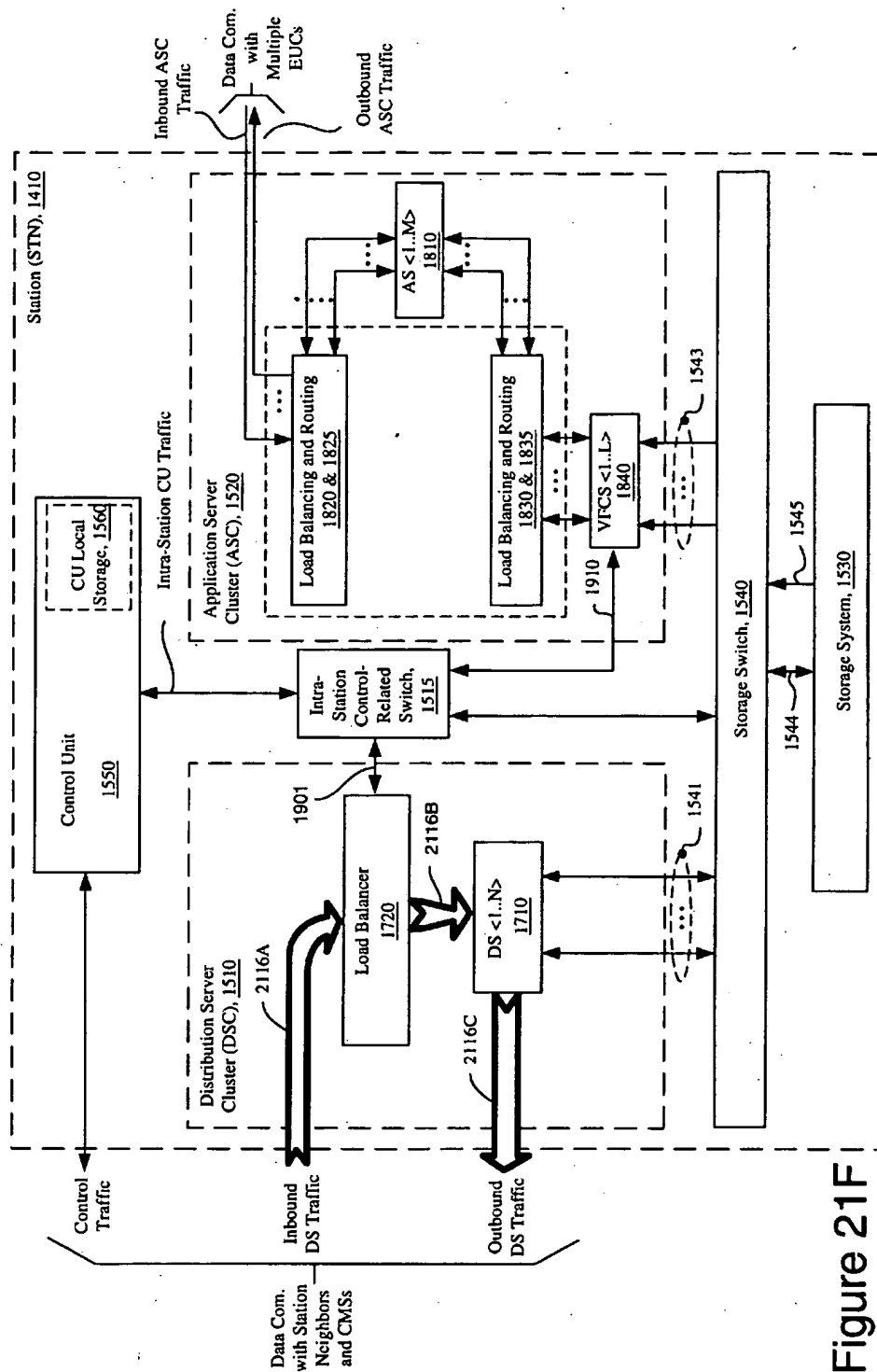
Figure 20

Figure 21A

Figure 21B

Figure 21C

Figure 21D

Figure 21E

Figure 21F

FOXTSG" SYSTEMS0

Figure 21G

| Mount the Metadata Database and the Content Provider Data Table 2201 | → | Mount the Volumes that contain the File Blocks 2202 | → | Initialize the Content Provider Name Cache 2203 | → | Initialize the File System and Assign a File Handle to the Root Export Directory 2204 | → | Initialize the File System for the Content Provider Directories 2205 | → | Initialize the File Name Cache 2206 | → | Export the File System 2207 |

Figure 22

Application Server request for file
2300

Does VFCS VNODE exist for the file? 2301

— no → Does file metadata exist? 2302

— no → Read and cache file metadata 2303

— yes → Create VFCS VNODE for file 2304

— yes → Any Block in transient block cache? 2305

— no → Read blocks; send "prepare" to DS; perform read ahead 2306
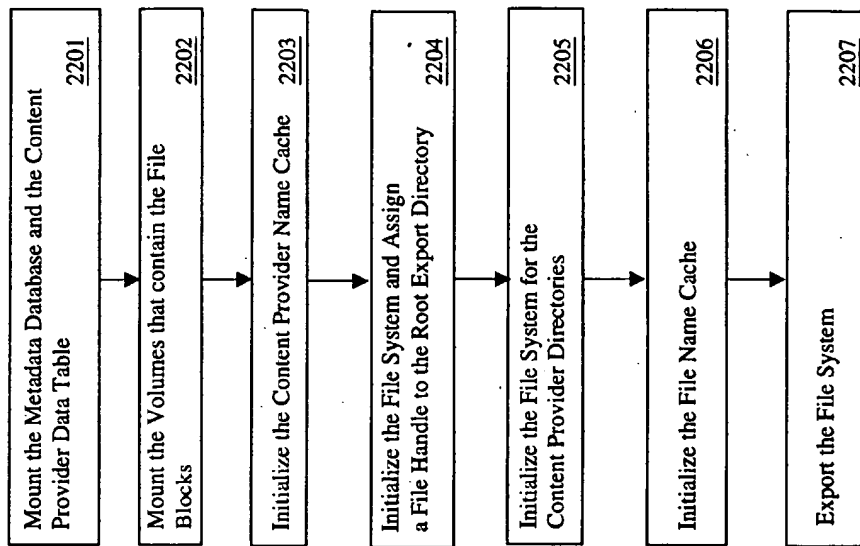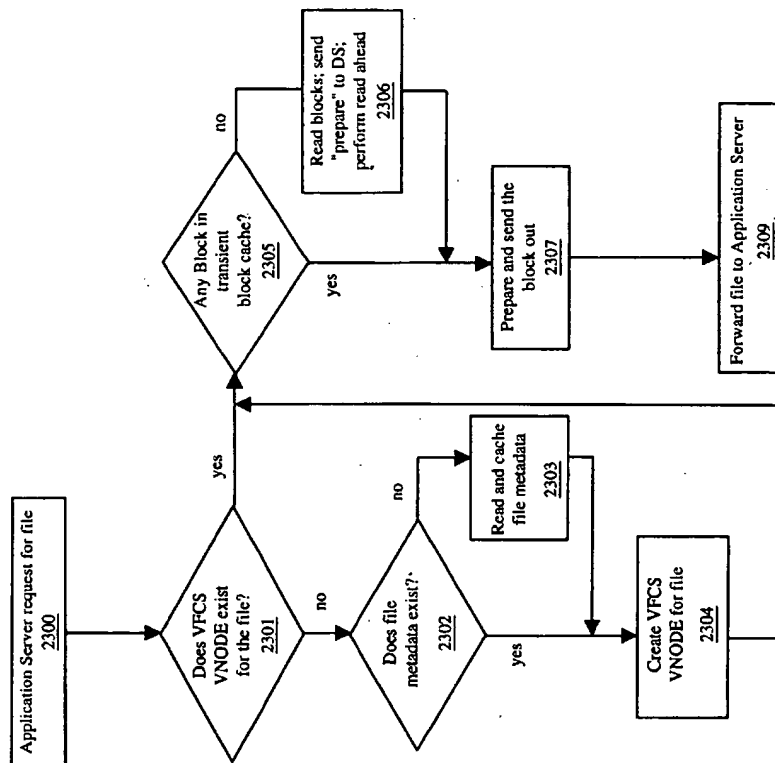
— yes → Prepare and send the block out 2307

Forward file to Application Server 2309

Figure 23

Figure 24

Figure 25